

## ABSTRACT

An ultra accurate gas injection system with vehicle transient air simulation is provided. The device includes an input device, at least one mass flow device, an air flow device, a controller, such as a PC based controller, and an output device. The air flow device issues an air flow rate signal indicative of at least the actual air flow rate and receives an air flow control signal. The controller issues gas and air flow control signals, repeatedly reads the air flow rate signal and compares the actual air flow rate with the target air flow rate. The controller adjusts the air flow control signal such that the actual air flow rate is substantially equal to the target air flow rate. The mass flow device injects at least one gas into the air stream which is subsequently emitted into the external system to simulate exhaust gas from a vehicle.